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—•—

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THE INTERNATIONAL GAS CONGRESS.

[By E. C. JONES, President of the American Gas Institute.]

The spirit of fraternity among gas men seems to have begun at the organization of the New England Association of Gas Engineers in 1871. Like all great and lasting movements this mother of gas associations was formed over a martyr's bier. One afternoon during the winter of 1870 the Hon. James B. Blake, who was superintendent of the Worcester (Mass.) Gas Light Company, and Mayor of the City of Worcester, was mortally hurt in a gas explosion in the purifying house of the Worceeter gas works. Besides causing the death of this good man, so much beloved in New England, the City of Worcester was plunged in darkness. At Mayor Blake's funeral the gas men who had gathered from all parts of New England to pay tribute to this worthy man, many of them meeting for the first time, decided to form the first organization of gas engineers. The City of Worcester was again lighted by gas the night of Mayor Blake's funeral.

Since this beginning of gas associations, the growth of the business and the wide extent of territory covered by it prompted the formation of other associations, until now there are eighteen within the boundaries of the United States, one in Canada, and one or more in every foreign country, the latest probably the Imperial Gas Association of Japan.

In 1871 gas manufacture was a business filled with secrets, and each gas man went plodding along in his own way without knowledge of his neighbors' doings, and each probably thinking that his way was the best. To-day the gas business probably the second in importance of the great industries of the world, has no secrets connected with it, and every busy worker in the field is only anxious to share his knowledge with his neighbor. This harmony of interests has been created by gas associations. In the United States there are two great associations, the American Gas Institute, and the National Commercial Gas Association, each doing its work in what is supposed to be a separate field, but each is dependent upon the other, and their works bear the same relationship that eating has to cooking.

These two associations probably include in their membership nearly all of the members of the other sixteen associations of the country, and a meeting of either of them brings together a splendid body of men devoted to the gas business, and representing every nook and corner of this great country—from the Pacific to the Atlantic and from the borders of Canada to the Gulf of Mexico.

Through the medium of gas journals throughout the world there has been an interchange of ideas and methods, which has brought the gas men of foreign lands close to their brothers in America; but to further promote the friendship and co-operation of the gas men of the world an International Gas Congress was called together during the Paris Exhibition of 1900.

This congress was held at the Palais des Congres, September 3 to 5, 1900, and was attended by 1064 representatives of the gas industry from all parts of the world. M. Théodore Vautier, President of the Société Technique de L' Industrie du Gaz en France, was president of the congress and twelve presidents of gas associations in different parts of the world presided for short periods over the sessions. Twenty-eight papers on subjects relating to the gas industry read at the congress by representatives from the following nations: France ten, Germany six, United States four, Holland three, England, Austria, Denmark, Switzerland and Ecuador one each. The work of the congress extended over Monday, Tuesday and Wednesday, while Thursday and Friday were devoted to the exposition, Clichy Gas Works of the Paris Gas Company, and other excursions, besides social functions.

That congress was so successful in bringing together representative gas men of the world into closer friendship that it was suggested, through the initiative of Mr. F. H. Shelton, then president of the Western Gas Association, to have a Congress of Gas Associations of America in connection with the Louisiana Purchase Exposition in St. Louis in 1904, with Mr. C. J. R. Humphreys as chairman of the committee of arrangements.

This congress was held in Library Hall, Hall of Congresses, inside of the Exposition grounds, June 15 and 16, 1904. Ten gas associations were represented and the attendance was 254. Five papers were read and ably discussed. The printed proceedings of these two gas congresses are among the most interesting books in gas literature; milestones that mark the road of progress in gas engineering.

When San Francisco was selected as the Exposition city to commemorate the completion of the Panama Canal, the Pacific Coast Gas Association decided that there could be no more fitting occasion to bring together the gas men of the world in an International Gas Congress than the celebration of this greatest of world's engineering achievements, and so San Francisco was selected for the Gas Congress on account of the spirit of the people, and the wonderful location of the beautiful city covering the hills of the peninsular guarded by the Golden Gate. This charming cosmopolitan city on the Bay of San Francisco, with its charm enhanced by the delightful climate of California, is in itself a perpetual Exposition.

As far back as 1911 the Pacific Coast Gas Association at its meeting in Oakland, appointed a committee on International Gas Congress, and at the meeting in San Diego in 1912, a delegate was named to attend the meeting of the American Gas Institute at Atlantic City, in October, for the purpose of conveying an invitation from the Pacific Coast Gas Association to the American Gas Institute to participate in an International Gas Congress, to be held in San Francisco during the Exposition period, to take paternal charge of the Congress. and to issue invitations to the gas associations of the world in the name of the American Gas Institute. This invitation was accompanied by one from the Panama-Pacific Exposition Company to the American Gas Institute, requesting that its annual meeting be held in San Francisco in 1915. The delegate was courteously received, and there was much enthusiasm in favor of visiting California during the Fair. It was unanimously voted that the American Gas Institute hold its 1915 meeting and participate in an International Gas Congress in San Francisco during the week beginning September 27, 1915. A committee of 9 members was appointed to arrange the preliminary details. This committee issued invitations to all the gas associations in the United States and Canada to participate in the Congress, and name a delegate to represent it on the committee; and as these invitations were accepted the name of the committee was changed to the joint committee on International Gas Congress, San Francisco, 1915. Sub-committees were appointed to attend to the various details, and after several meetings the joint committee extended invitations to all the gas associations of the world to participate in the Congress.

There have been many acceptances of the invitation, and dele-

gates have been appointed to attend the congress. At the meeting of the American Gas Institute in New York in October, 1914, the previous vote taken was confirmed by a unanimous vote to hold its 1915 meeting in San Francisco, beginning September 27, 1915. The Institute also elected as its President, Mr. E. C. Jones of San Francisco, who had been previously honored by being elected President of the Pacific Coast Gas Association. This was a graceful compliment to the State of California.

At a meeting of the Gas Congress Committee held in New York, immediately following the meeting of the Institute, Dr. Alex. C. Humphreys was elected President of the International Gas Congress, and the presidents for 1915 of the gas associations participating in the congress were named vice-presidents. The selection of Dr. Humphreys is particularly happy, inasmuch as he represents the gas industry of the world, and while he is a member of nearly every gas association and many other scientific societies, he does not at the present time hold office in any gas association, and it is felt that his selection as President is acceptable to all gas men, and it is felt that under his able leadership all of the gas associations representing different geographical sections and departments of the business may be brought together in harmony and accord.

"The President and Directors of the Panama-Pacific Exposition have from the first recognized the desirability of providing for a series of congresses that would exceed in scope and excel in character anything heretofore attempted and that would stand as a monument long after the material features of the Exposition have been forgotten, and for the accommodation of these many gatherings the Exposition has provided the Exposition Memorial Auditorium, at a cost of more than $1,000,000." This auditorium occupies the entire block bounded by Grove, Larkin, Hayes and Polk streets, forming a part of the Civic Center, easily accessible from all sections and directly adjacent to Market street, leading to the gateways of the city—the ferry and steamship terminals on the water front.

"The Auditorium is erected by the exposition for the special use of the congresses and conventions to meet in San Francisco in 1915. The building and equipment will cost $1,250,000. The lot on which it is built is provided by the city at an additional expense of $701,000, and following the close of the exposition on December 4, 1915, the auditorium will be given to the City of San Francisco as a permanent memorial of the exposition.

"The auditorium has eleven halls, with seating capacities of from 400 to 10,000 people. In addition there are nineteen rooms suitable for committee meetings, or meetings of small convention sections, these seating from 30 to 125 people. By a system of rolling partitions the four large halls on the third and fourth floors may be converted into a maximum of fourteen halls, each with a maximum seating capacity of 250 people. The seating capacity of the main auditorium is estimated at 5,000 for the ground floor and 5,000 in the balcony."

The entire fourth floor has been reserved for the exclusive use of the International Gas Congress during the week beginning September 27. It has two halls 58x138 feet, with two committee rooms adjacent, and by the use of rolling partitions each of the large halls may he changed into five smaller halls, seating about 250 people each. The large halls are lighted by skylights in addition to the windows. The fourth floor also has two halls 41x64 feet directly connected with the larger halls and to the main corridor, so they may be used independently.

"All of the rooms in the building are well lighted by electricity. Provision is made for intercommunicating telephone service, call bells, etc. Heating and ventilation are supplied by fans in the basement furnishing fresh warm air to all the rooms; the fresh air taking the place of the air removed from the rooms by exhaust fans on the roof."

It is proposed to have sessions of the congress each day beginning Monday, September 27th, from 10 A.M. to 1 P.M., leaving the afternoons open for the annual meetings of the various gas associations, and allowing time to visit the exposition and other points of interest.

The hotel accommodations in San Francisco are ample and excellent and every taste in appointments and price may be easily satisfied. When it is remembered that the new city of San Francisco is less than nine years old, and all of the hotels and apartment houses are of the best modern fire-proof construction, finished and furnished in keeping with the best taste of to-day, there need be no fear by the most exacting traveler as to comfortable hotel accommodations. This matter is in the hands of a committee of the Pacific Coast Gas Association, and at the present time 100 rooms, with baths,have been reserved at the Palace, St. Francis and Fairmont hotels, the principal hotels in San Francisco, and the committee is prepared to make reservations in any of the large number of first-class hotels to suit the wishes of the visitors to the congress. The details of the congress are in the hands of sub-committees of the joint committee in the East, covering the departments of Arrangements, Publicity, Transportation and Invitation; and the committee on Papers, under the able chairmanship of Mr. Alten S. Miller, is busily engaged in securing papers from representative gas men throughout the world, covering all fields of activity in the industry. The local arrangements for the congress are being handled by a committee, of which Mr. John A. Britton of San Francisco is chairman, and this in itself assures success. Sub-committees will attend to the necessary arrangements at the meeting, of halls, registration, care of baggage, local transportation, hotel accommodations and the reception and entertainment of visitors.

The Panama-Pacific Exposition buildings and grounds are completed and the exhibits installed, so that on the opening day, February 20th, everything was in readiness to receive visitors. The exposition is like fairyland, and its equal has never been attempted in size or beauty and marvelous color effects.

It is the earnest hope of the Pacific Coast Gas Association that San Francisco shall be the mecca of all gas men during the Gas Congress.

The following American Gas Associations have voted to participate in the International Gas Congress, and have selected members to represent them on the Joint Committee on International Gas Congress:

American Gas Institute.
Empire State Gas and Electric Association.
Guild of Gas Managers of New England.
Illinois Gas Association,
Illuminating Engineering Society.
Indiana Gas Association.
International Acetylene Association.
Iowa District Gas Association.
Michigan Gas Association.
National Commercial Gas Association.
Natural Gas Association of America.
New England Association of Gas Engineers.
New Jersey State Gas Association.
Pacific Coast Gas Association.
Pennsylvania Gas Association.
Society or Gas Engineering of New York City.
Society of Gas Lighting.
Southern Gas Association.
Southwestern Electrical and Gas Association.
Wisconsin Gas Association.

The Gas Industry-at-Large is represented by Dr. Alex. C. Humphreys, president of the Congress; past president American Gas Light Association and American Gas Institute; president Humphreys and Miller, Inc., Buffalo Gas Company, and Stevens Institute of Technology.

England was the first foreign country to officially accept the invitation to participate in the International Gas Congress. At the meeting of the Council of the Institution of Gas Engineers of England, it was voted to participate, and Mr. Edward Allen, M. I. C. E., a past president of the institution was named as the delegate to the congress to represent the Institution of Gas Engineers of England.

Gas in Italy.

The "Journal für Gasbeleuchtung" quotes from an Italian paper figures on the consumption of gas, electricity, petroleum and calcium carbide in that country for 3 years. The English equivalents are as follows:

Coal Gas.—Electricity.—Petroleum.—Carbide.

	Cubic Feet.	Board of Trade Units.	Tons.	Tons.
1910–11....	9,182,056,000	1,460,000	83,392	23,156
1911–12....	9,358,634,000	1,649.000	117,337	24,913
1912–13....	9,888,368,000	1,826,000	111,420	20,816

Though all four illuminants show an increase in the second year over the first, in the last year only coal gas and electricity continue to show growing consumption. Evidently the figures given for coal gas refer only to gas used for lighting and heating, since, according to another authority the total consumption of gas in Italy in 1910 was 11,985 million cubic feet, and excluding that used for industrial purposes, the quantity for lighting and heating only was 9,024 million. Peat gas also is used, and now that the regions of Mantua and Ferrara have been drained, it has become possible to work the peat bogs below sea-level. A company has been formed, and works erected for the production of gas and the recovery of residuals by the Mond process.

THE CONCRETE PILE HOLDER FOUNDATION AT LYNN.

[From the paper read by FRANCIS E. DRAKE, before the New England Association of Gas Engineers.]

When the contractors, from whom we ordered our 5,000,000 cubic foot holder, came to settle the question of foundation, it resolved itself into one of concrete piles, because of durability and cost. The preliminary tests showed that our conditions were ideal for concrete piles; and I am informed that the question of cost lined up about as follows:

First. Carrying excavation to the underlying stratum of sand about 12 feet below the surface of the ground, and supporting the tank bottom on a pad of concrete at this level, then carrying a retaining wall with annular space to twelve inches above grade, would have cost approximately 25% more than the concrete pile foundation.

Second. Carrying excavation down to permanent water level, about 6 feet below the present surface, and driving wooden piles for supporting a concrete pad, then carrying a retaining wall with an annular space to a foot above grade; would have cost approximately 33⅓% more than the concrete pile form.

The contractors tell me that these comparisons are likely to be misleading if used as a criterion for other localities. They say that such a wooden pile foundation for supporting a holder usually very much exceeds the figures given, which would make the percentage increase of cost for a wooden pile foundation over one of concrete piles much greater in most localities. Their figures for wooden pile foundations for 5,000,000 cubic foot holders constructed in three large cities show the increased cost of that form over one of concrete piles as follows:

City *A*	46%
City *B*	36%
City *C*	100%

The 5,000,000 cubic foot holder as contracted for is to consist of four lifts in a steel tank with the following dimensions:

Tank: 204′–6″ dia. × 43′–0″ high.
Bottom plates $\frac{5}{16}$″ to $\frac{7}{16}$″ thick.
Shell of 8 courses $\frac{7}{16}$″ to $1\frac{23}{32}$″ thick.

Top Lift—193′–7⅝″ dia. × 42′–0″ high, with crown the segment of a sphere, and having a central rise of 12′–6″.
Plates, $\frac{3}{16}$″ to $\frac{3}{8}$″ thick.

Second Lift—196′–3½″ dia. × 42′–0″. Plates, $\frac{3}{16}$″ to $\frac{3}{8}$″ thick.

Third Lift—198′–11⅜″ dia. × 42′–0″. Plates, $\frac{3}{16}$″ to $\frac{3}{8}$″ thick.

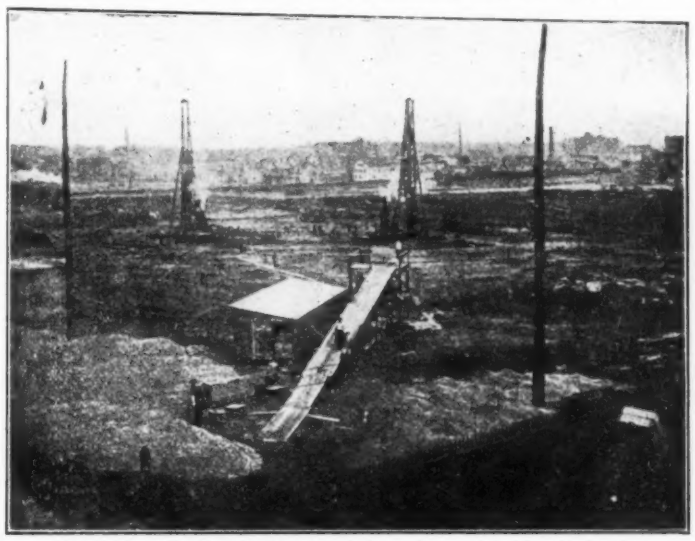
Fourth Lift—201′–7⅛″ dia. × 42′–0″. Plates, $\frac{3}{16}$″ to $\frac{3}{8}$″ thick.

The standards and struts will be of I beam and channel iron construction, varying from 24″–80 pounds beams for the lower standards to 7″—12.25 pounds channels for separating members.

The holder, when completed, will have a height of 211′–0″ and a diameter of 204′–6″. There will be three 30-inch and one 20-inch inlet and outlet pipes, and the holder, when inflated with air, will throw a maximum pressure of 12.76 inches. Approximately 5,300,000 pounds of steel will be used in its construction and the water in the tank will weigh 84,678,500 pounds, making a total weight on the foundation of 89,978,500 pounds, or 44,989 tons.

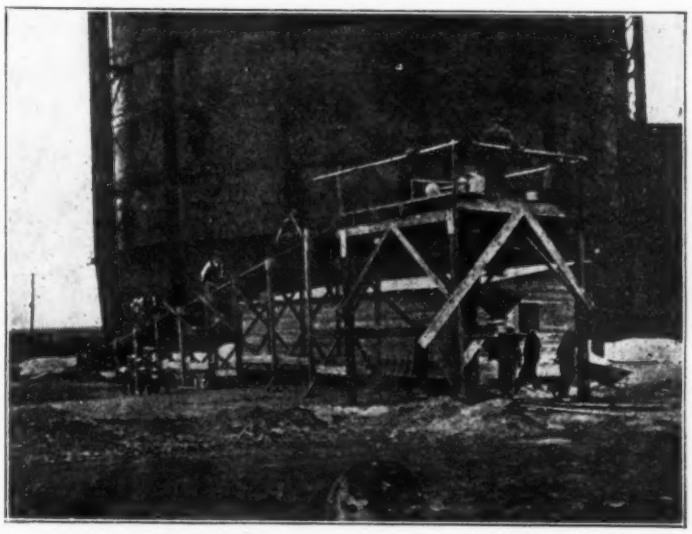
Twenty-five years ago the site was some 12 or 14 feet lower and marshland. This was pretty well known, but, to be safe, borings were made by driving down ¾-inch extra heavy pipe. These tests showed approximately 10 feet of fill, composed of most everything from ashes and clinker to brickbats and old clay materials. Below this fill was a hard layer of peat, 12 to 18 inches thick, and then a foot of soft muck, below which was good hard sand mixed with clay. These determinations were corroborated when the piles were driven, for in every instance they "brought up" in the hard peat at a depth of from 10 to 11 feet and, after forcing through this and the soft muck, stopped finally in good hardpan at a average depth of 13 feet 9 inches.

The pile used is known as a "Pedestal Pile" and the method of driving and formation is rather novel. A cylindrical steel casing 16 inches diameter by ⅜-inch thick, with outside reinforcing bands top and bottom, and of the required length, is used as a form for the pile. Inside of this casing is fitted a core, a smaller and longer pipe with a cast steel point and an enlarged steel head. the latter engaging the top of the casing, while the former projects some 4 or 5 feet below the casing. In the head of the core there is an oak driving block which receives the blows of the hammer.



Site of Holder, October 27, 1914.

The photographs show the pile driver with casing, ram and hammer just before spotting preparatory to driving, and the casing in the ground with the ram withdrawn, the casing not driven quite home, but left some 3 feet out of the ground for the purposes of this photograph.

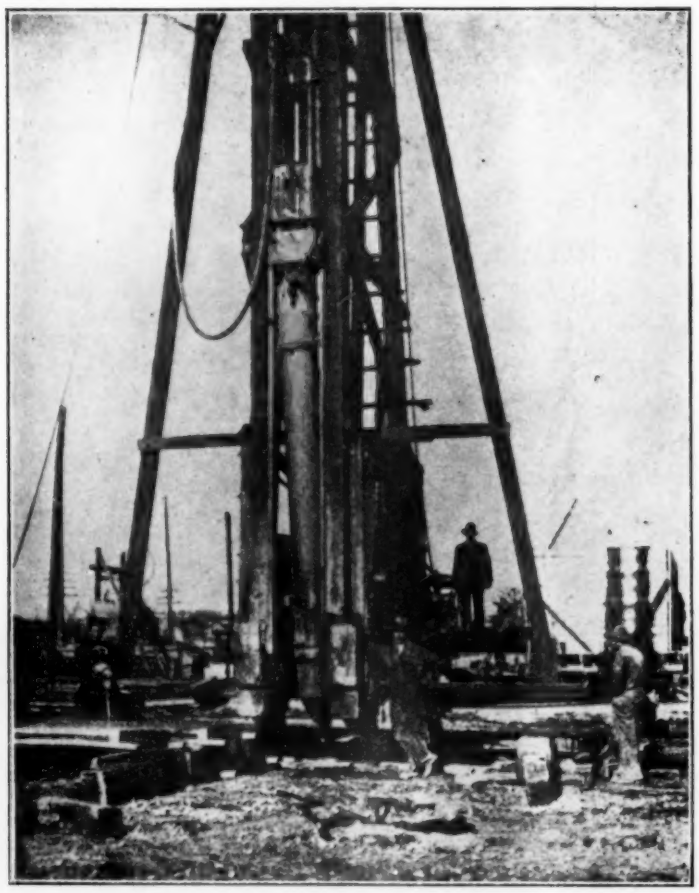


Gravity Concrete Mixer.

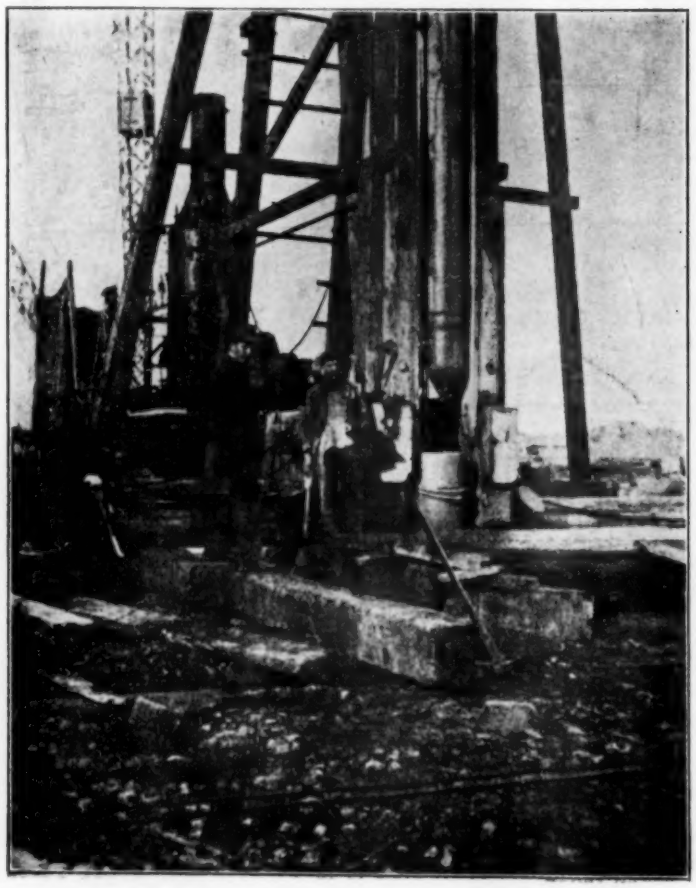
The core is fitted into the casing and they together driven into the ground by a 3,000 pound steam hammer, that has a drop of 36 inches and delivers 68 blows per minute. They are driven to a refusal of 8 to 10 blows per inch, the core is then withdrawn and void partly filled with a charge of concrete.

After the concrete has been shoveled into the casing, the core is again inserted and used as a ram, driving down through the charge, which is compressed and forced out against the surrounding soil, pushing back and compacting the earth. The ram is then withdrawn, more concrete shoveled in and the ramming process repeated, forcing the concrete still further out. This ramming operation is carried to a refusal of about 15 blows per inch, when the charge has been forced out into a base about 3 feet in diameter. The ram is then removed, the casing filled to the top with wet concrete, and the casing slowly and evenly withdrawn with the ram spotted on the concrete holding it in position. Upon the withdrawal of the casing, the surface of the concrete will sink some 3

to 6 feet, according to the length of the pile. The contractors claim that this volume of shrinkage conforms exactly with the volume of the casing wall which it replaces. The resultant pile shows a concrete stem 17 inches in diameter surmounting a bulbular base approximately 3 feet in diameter.



Pile Driver, showing Casing, Ram and Hammer.



Casing in Ground and Ram Withdrawn.

The diagrammatic sketch shows the method of forming the "Pedestal Pile," and the photograph is of an experimental pile driven and dug up that I might obtain a photograph of an actual pile. This pile was driven to a depth of only 8 feet, so did not fetch up in hardpan, which accounts for the rather flat footing. If it had been driven into hardpan this footing would have been bulbular as in the diagrammatic sketch. In either case, an excellent footing course is formed and in the case of our foundation, with piles spaced on 5 foot 2 inch centres, there must be practically a continuous footing under the whole foundation. It can be readily seen that this form of pile must have greatly increased carrying capacity over the ordinary type, for it not only carries its load by frictional adhesion, but has the additional direct bearing power of the broad base resting on the compact subsoil.

Our foundation is 204′–6″ in diameter and the piles number 1.361. The piles are brought to grade, except the outer row which was left 3 feet below the surface to receive ring of concrete 2 feet wide by 4 feet deep, to stiffen the slab where the steel tank superstructure rests, and it also goes into the ground far enough to prevent any lifting action from frost.

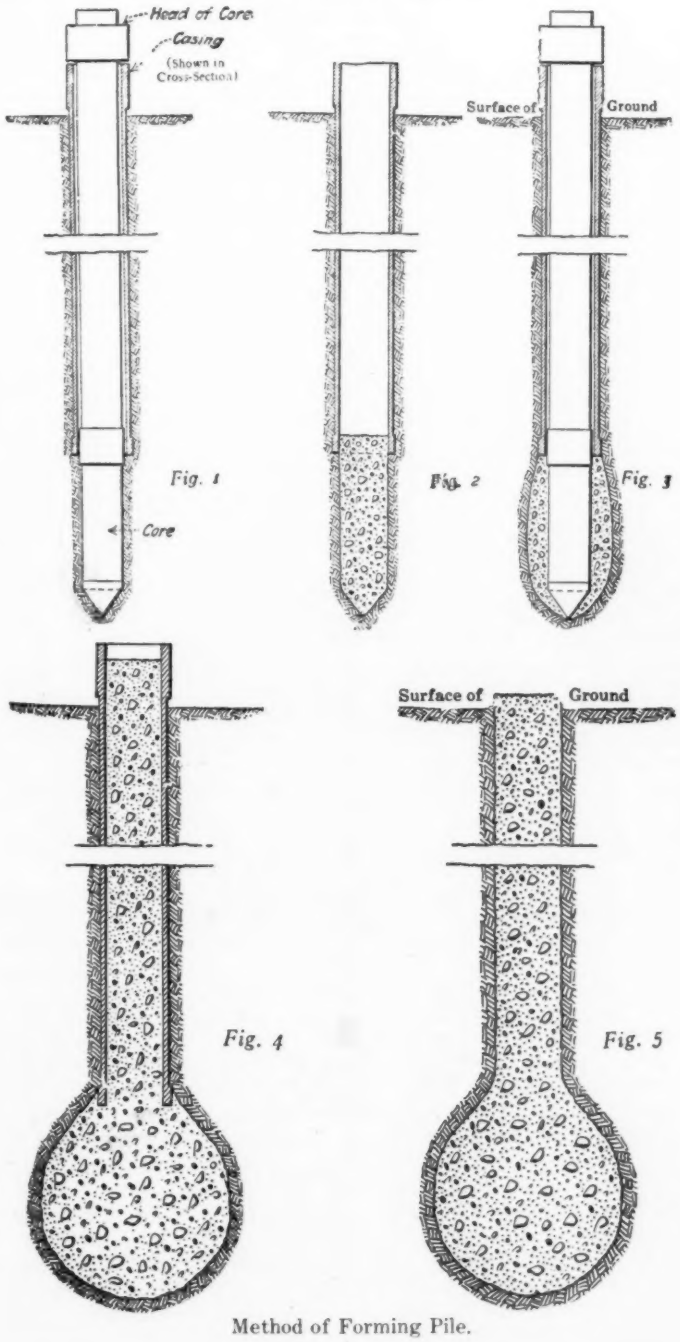
After the piles were completed, two $\frac{3}{4}$-inch round reinforcing rods were placed across the top of each line in both directions. Between the $\frac{3}{4}$-inch rods, and on top of them, were placed $\frac{1}{2}$-inch rods, wired to the $\frac{3}{4}$-inch rods and together. After the reinforcement was completed the piles were ready to receive the 12-inch pad.

Shovelers Ready to Fill Casing.

Before the pad was poured, the two piles which brought up with the easiest penetration were picked for test. Pile *A* 36 in the outer ring, driven October 30th, was tested November 13th. It was 11′–6″ long, since it was on the outer ring. The load applied was 45 tons and it showed a total settlement of $\frac{9}{32}$ of an inch. The photograph shows the test box on the pile.

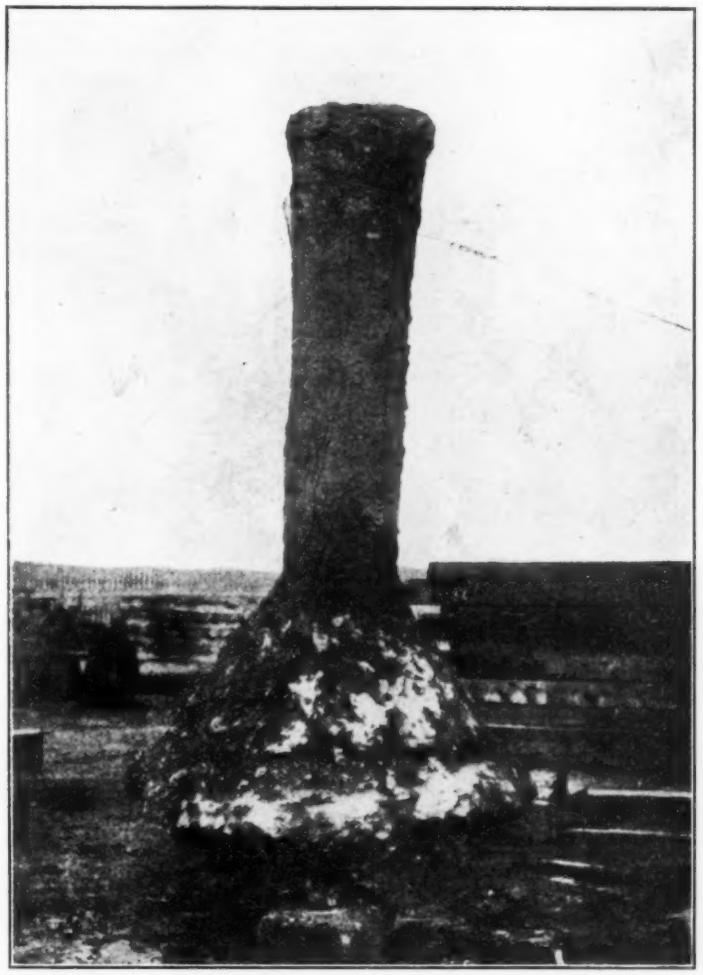
Pile *A* 136, also in the outer ring, brought up with by far the the easiest penetration of the entire number, so it was subjected to a most rigid test. It was 12 feet long, driven November 3rd and tested November 21st. It was first loaded with 45 tons for 72 hours, giving a settlement of $\frac{5}{16}$ inch. Next a load of 60 tons was applied and at the end of 96 hours the settlement was $\frac{1}{2}$-inch. Then a final load of 75 tons was applied, and at the end of 120 hours the total settlement was $\frac{13}{32}$ inch. The contractors claim an allowable settlement of $\frac{3}{4}$-inch with a load of 45 tons, and as the entire load of holder and water gives an average per pile of something like 33 tons, it will be seen that the factor of safety is con-

siderable. The coutractors figure one of these piles capable of carrying a safe load of from 30 to 36 tons.



Method of Forming Pile.

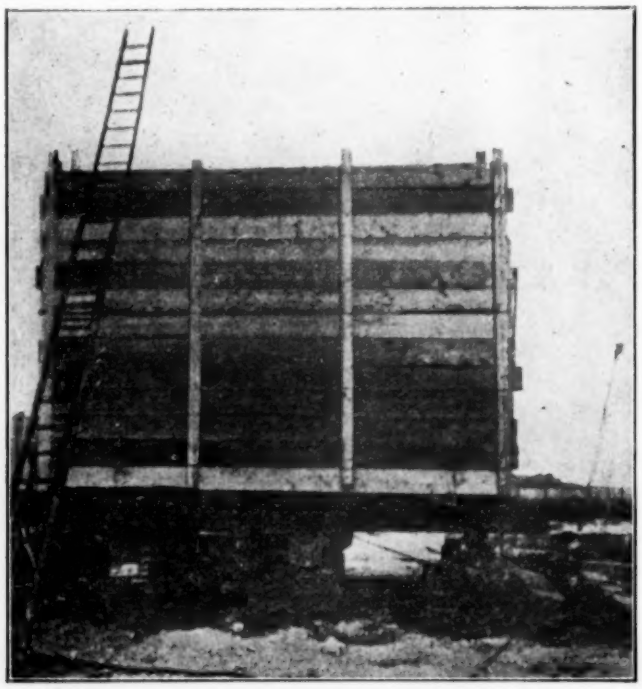
A 30-Inch Inlet Pipe in Place Ready for Concrete.



A Pedestal Pile.

View Showing Reinforcing Rods

The concrete in piles and pad was a 1 : 2 : 4 mixture. There was used 5,479,075 pounds of crushed stone, one-half of it in the piles. The stone for the piles was mixed, about two-thirds was ¾-inch, and one-third was ½-inch; while for the pad two-thirds of the stone was ½-inch and one-third was ¾-inch. The sand used was 1,490 tons, and the cement totaled 16,200 bags. For reinforcing the pad, 54,870 pounds of ½-inch rods and 45,913 pounds of ¾-inch rods were used. The total lineal feet of piles driven was 18,730; the longest pile 15′ 6″ and the shortest, outside of those of the outer ring, was 12′–6″. Those in the outer row was left below grade and averaged about 11′–6″ long. The average length of all piles was 13′–9″, and the average number driven per day was 52.4, with two drivers; an average of 20.6 minutes for the complete forming of a pile. The first material arrived at the site on October 20th and driving began on the 27th. The entire foundation required 41 working days to construct and was finished December 12, 1914.



Test Box Filled with Sand on Pile A 36.

In this last photograph you see one of the inlet pipes after the piles underneath had been broken off and the 30-inch pipe placed. These pipes, after being lined up and joints made, were embedded in a solid block of concrete.

How to Select, Train and Hold Your Selling Force.

[Some of the Discussion on Mr. French's Paper at Minneapolis.]

MR. A. D. DUDLEY believed the selection of salesmen to be one of the most important tasks the manager had to perform. What had to be looked for primarily was the commercial instinct. He did not mean that salesmen could not be made, but believed that this qualification with the same training will bring out a much better salesman; and it should be looked for first. Another vital qualification was willingness to work. More men fail as salesmen because of being unwilling to work persistently and constantly than for any other reason.

MR. WM. M. HALSEY said that in his organization they had salesmen spend at least a day in the order department, They came into contact there with customers who were ordering meters and various appliances, and also could hear complaints that were coming through. The salesmen were thus able to see how the clerks in the department handled the business that he himself would later on send. In this way be became informed as to the proper procedure when occasion demanded.

MR. J. B. MYERS considered that it was of value for the man in charge of the sale force to have the privilge of selecting his men, as it was not always satisfactory to have salesmen "wished on" the department, to be tried out, and such a process often means expense to a company. He endorsed Mr. Dudley's remarks in regard to men possessing a selling instinct. The usual procedure in Philadelphia is to put a man through the shop and demonstration rooms and then send him out with experienced men, a course that occupies two or three weeks. Those who have adopted the point system know it is necessary all the time to hold up before the men the possibility of making all the money there might be in their districts. They had not found very young men satisfactory on the street, many of them were discouraged quickly; moreover consumers and would-be customers will not consider their arguments as seriously as those from men older in years.

MR. J. P. HANLAN believed that one of the best helps in holding salesmen was to provide them with the right kind of goods to sell. The salesmen should also be helped by prompt installation of orders after they were taken, so that a salesman's troubles could end when the goods were sold. They should also be helped by proper advertising; and the salesmen should be educated to see the value of advertising. He believed in making the salesmen a "lifter" and not a "leaner," and paying him according to the results he secured.

MR. C. N. STANNARD mentioned a few of the principles which has been of assistance to him in selecting, training and holding men. In selecting he considered appearance, education and intelligence; ability to apply their education and natural ability and adaptability. He believed one should consider their habits and personality, and above all things, men engaged should be enthusiastic and industrious.

He considered it a well-founded belief that a man should work in the various departments and learn thoroughly the articles sold on the sales floor, and as an assistant representative. He believed particularly that the company should make it easy for the men to take advantage of the Association's Educational Course.

To hold men, he believed in good salaries provided good results were obtained. He considered the salesmen should be treated as the employer himself would like to be treated; that they should be made so interested in their work that they would wish to remain with the company and receive promotion in due time.

MR. T. M. AMBLER believed that the first great requisite in selecting men consisted of really having a hearty sympathy with any man looking for work. If employers had that real sympathy they could not help showing it, and the applicant would soon appreciate this fact and become in better accord with his possible employer. A salesman should be encouraged to tell his ambitions, as in that way he would be apt to open his heart and tell not only what he expects, but what he is capable of doing, and his qualifications can thus better be determined. He had read a great deal about mental science and judgment of character, but found the work of those things he tried to apply, the bigger mistake he was apt to make. It all come down to a matter of the intuition and judgment of a man trying to select another to do work that he himself probably cannot do. In order to do it, one had to recognize his own limitations.

MR. G. E. SMITH considers that instead of breaking a salesman in as described in the paper, it would be more satisfactory to allow him to go out with an older salesman for a day at a time for about two weeks, thus giving him a chance to learn older salesman's methods. One of the important parts of training was to give them a thorough knowledge of the stock. A salesman should visit the general store-room at least once a month. He believed also that a salesman, even after a month or two of training should be very carefully watched, and on Saturday afternoons should be put on the sales floor in order that he might learn the stock better.

MR. H. H. NEWMAN said that the best salesman he ever engaged he had picked off a vegetable wagon. This man was a born salesman. Often after a man had been trained, the company does not keep up that man's interest as it should. Every man in the field should know something about the new appliances that come out. It would also interest him to put him in touch with some of the details that had been learned at meetings. and it was a mistake for a manager to keep everything of that sort to himself. By keeping a man interested, one can make him a better salesman.

MR. R. R. YOUNG considered that the characteristics of a born saleman were intelligence, ability to talk well, knowledge of his subject; and most important of all, courage. A timid man could not approach a cold prospect and develop him into a purchaser. He thought that the majority of gas companies did not pay their men salaries high enough to keep them. He believed that the men should be paid partly on some form of commission basis.

He suggested that every New Business Department of any size should have a bibliography on selling and salesmanship. He believed in a short catechism on the different points of selling, and that that idea should form the subject of a future paper.

MR. E. P. BAKER did not believe in trying to hold a man if he was not adapted to the work. If the company could not put him on anything but selling he should obtain another employer.

THE PRESIDENT asked that Mr. Myers amplify the subject of point payment.

MR. MYERS said they usually started men at $50 a month guaranteed salary, and paid 12 cents a point on all orders brought in. Should any salesman be instrumental in bringing in prospects which are closed by special men, such as those in the hotel or industrial divisions, the same amount is paid to the salesman on the closed sale. The points are credited to the man's account after installation. Office sales are credited in red and are valued at 2½ cents per point to the men in that particular district, even if the purchaser had been seen by them. On the second year of his employment, his first year's work by months is gone over carefully, the four low-point months are put aside, and the highest of the low four months is used as his minimum guaranteed salary for the following year. The number of points to make the new minimum value apply just the same. If he does not make the new minimum in points, his point minimum drops back at the first of the coming year.

Between 1911 and 1913 their men had earned an average per month, as follows:

1911	$66.10
1912	85.69
1913	84.69

Taking all the changes in the men in the force into account, and only those who had worked on the point system of domestic appliances. The Philadelphia Gas Works had made a number of changes in their sales representatives during that time. In 1911, 71% of their force was changed for one cause or another. In 1912, 63%; in 1913, 64%, and in 1914 to August 1st, they had changed only 46%. These figures did not mean in every instance that the men were not capable, as some left of their own volition, and many other factors were involved:

Comparative Costs of Gas and Electricity for Illuminating Purposes.

[From paper by B. K. CASH, read before the Indiana Gas Association].

The strongest competition faced by the gas interests to-day, is that of electricity in the lighting field. It is very important that this competition be met on a plane of merit, showing the advantages of one illuminant over the other. In doing this cost plays a very important part, and it is necessary in the strife for new business and retention of that already obtained, to consider the cost of both illuminants from all angles, and to intelligently and truthfully convey this information to the public, in such a way as to show them the great advantage of the use of gas for lighting.

It is only possible to treat the subject of costs in a general way owing to the vast number of conditions that have a bearing on artificial illumination. The different classes and scales of rates, the innumerable types and sizes of units using either gas or electricity, and above all the local and specific conditions under which artificial light is obtained and operated, as: the space to be lighted, height and color of the walls and ceilings, the nature and requirements of the business using the light, quality of light desired. and the taste and fancies of the consumer; these all have to be determined locally. The usual information needed on costs are only those of installation, maintenance and operation.

The rates here used are those in force in this State. The average electric rate for commercial and domestic lighting in all cities of over 10,000 population—including municipal owned plants—is $0.07 9/10 per kilowatt hour. The average maximum rate charged for artificial gas in 18 cities of over 10,000 population, or all those using straight artificial gas is $0.97 per thousand feet. Taking these figures as a basis it would be fair to use $0.08 per kilowatt hour as the average electric rate, and $1.00 per thousand cubic feet as the average gas rate.

The following table has been compiled to show the average cost per candle power of electricity and gas. The figures shown are general, such as are used and accepted as applying to ordinary working conditions. Date is given on four of the most efficient lamps, from smaller units to the larger; their estimate candle power and approximate hourly consumption, and from this the average cost per candle power per hour is determined.

Electric Rate $0.08 per K. W. H.

Lamp.	Estimate Candle Power.	Hourly Consumption.	Cost per Hour.	Cost per Candle Power Hour.
46 Watt Tungsten.	34	40 Watts	.0032	.000094
150 Watt Tungsten.	134	150 Watts	.012	.000089
200 Watt Nitrogen.	240	200 Watts	.016	.000066
740 Watt Nitrogen.	1150	750 Watts	.06	.000052

Average Cost per Candle Power $0.000075.

Gas Rate $1 Per M. Cubic Feet.

Lamp.	Estimate Candle Power.	Hourly Consumption.	Cost per Hour	Cost per Candle Power Hour.
No. 3 Reflex.....	85	3.6 Cu. Ft.	.0036	.000042
No. 10 Indoor Lamp	228	9.0 Cu. Ft.	.009	.000039
3 Mantle Invert. Arc	439	15.0 Cu. Ft.	.015	.000036
5 Mantle Invert. Arc	632	25.0 Cu. Ft.	.025	.000039

Average Cost per Candle Power $0.000039.

Thus it is shown that it is possible at present day rates and with modern equipment to produce an equal amount of light with gas at about one-half the cost of electricity.

This fact is of all importance in the field of commercial and industrial lighting. The average business man or factory manager is ever ready to figure operating costs, and to do anything that will materially reduce his running expense. The cost of installation for this class of business is some times large, but is money well expended owing to the saving in operation. If piping is done when buildings are in course of construction it affects quite a saving and leaves an outlet for future business that otherwise might be lost. This cost as a rule will be as reasonable as that of wiring, especially where it is required to place all electric wiring in conduit, for that means laying pipe and placing the wiring in it.

The subject of commercial lamp maintenonce is widely discussed but the charges and service rendered vary so greatly that it is impossible to arrive at any definite comparison of costs as between gas and electric companies. Where free renewals of electric lamps given and repairs done without charge, it is obvious that the cost to the consumer of electric maintenance is much less than that of gas. The schedule of most gas companies compare favorably with the cost of maintaining electric installations when the consumer pays for his lamp breakage and other repairs—especially if the costly and some times short lived nitrogen filled lamps are used.

Much progress has been made in commercial lighting with gas. New and efficient type lamps are on the market, of more artistic design. Most every condition and requirement can now be successfully met; the low ceiling room, the most handsome business place, or where special rays are required. As in photography, which is being successfully accomplished under gas light; color-typeing establishments and places demanding a near approach to natural illumination, have found a great benefactor in gas with the aid of a special designed lamp. Both gas and electric companies are finding a popular demand for semi-indirect lighting, and systems where the light source is subdued. Although more expensive to operate, the excess cost is more than counter-balanced by the increased attractiveness and pleasing results obtained.

The field of out-door lighting is not entered on a large scale by gas companies owing to the low electric rate made for this class of business. Quite an amount of outside store lighting is obtainable by means of the gas arc, and some companies are considering the advisability of installing such lamps in commercial districts on a revised flat rate basis as a profitable means of increasing their output. The plan is to figure the monthly consumption of the lamp, using the number of hours it would be lighted, and from this find the cost of gas consumed. To this add a reasonable amount for cleaning, lighting extinguishing, repairing and depreciation, and overhead expense. Then from this total determine the net amount to be charged the consumer each month. The cost of installation is handled the same as any other construction account, mains, service or meter work, for the piping and lamps remain the property of the company and furnish service whenever required. An idea

(*Continued on page 170*)

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E. P. CALLENDER, President.
A. M. CALLENDER, Vice-President and Treasurer.
CHARLES H. WADELTON, Secretary and Manager.

SANFORD K. CAMPBELL, Editor.

NEW YORK, MONDAY, MARCH 15, 1915.

New York Commission Changes.

It is announced from Albany that Governor Whitman has determined upon the summary removal of four of the First District New York Public Service Commissionres, namely, Chairman McCall, and Commisioners Cram, Williams and Wood. The body has been investigated by a Legislative Committee, and on their findings of "inefficiency, neglect and misconduct" the Governor will act.

While the Democratic members of the investigating committee, in a minority report, say the work of the Commission has been rendered difficult by many "jokers in the law which favor corporations regulated by it," the testimony brought out by examination of the individual Commissioners showed them in anything but judicial attitudes. The work they had and yet have to do is of stupendous importance, and we feel that Governor Whitman will be careful in selecting their successors. We hope that he will include an engineer of standing in his appointees, and some good business men.

Institute Directors' Meeting.

The third monthly meeting of the Board of Directors of the American Gas Institute, in the absence of the President, was called to order by the First Vice-President, Mr. Walton Forstall, with the following members present: W. S. Blauvelt, R. W. Bush, L. R. Dutton, A. E. Forstall, W. H. Gartley, J. B. Klumpp, and Geo. G. Ramsdell, Secretary.

A report was received from the Public Relations Committee covering their activities for the last two months.

The Technical Committee submitted its monthly report.

The Beal Medal Committee, appointed to select the best paper of the 1913 meeting, reported the award of the medal to Mr. O. B. Evans, for his paper on "Carbonization of Coal in Vertical Retorts."

The Chairman announced that subject to definite acceptances from the persons appointed, the Committee on Securing Members would consist of the following: H. C. Blackwell, Davenport, Ia., Chairman; W. A. Bertke, North Yakima, Wash.; F. A. Cressey, Jr., Modesto, Cal.; C. E. Reinicker, Chicago, Ills.; G. I. Vincent, Des Moines, Ia.

The report of Messrs. A. E. Forstall, Glass and Rice, recommending changes in the Constitution relating to the nomination of officers, was received and ordered published in the "News." The Directors recommended to the committee that they reconsider, with a view to allowing more time for independent nominations, the dates covered by the amendments. This matter will be discussed further by the Directors at their March and April Meetings.

No final action was taken in reference to the proposed adoption of the Metropolitan No. 2 as a standard test burner. A memorandum in connection with this subject was received from the Bureau of Standards, and the directors intend to continue discusion of the subject in Chicago in March and in New York in April, at which time probably the Public Relations Commmittee may have some recommendation to make.

The Finance Committee was given power to raise money necessary to meet the deficit which is anticipated for this fiscal year, due to the largely increased activities of the Institute during the past two years.

The Finance Committee was authorized to spend not exceeding $100 to place the Institute's bookkeeping on an income and expense basis.

The Board decided to hold its March meeting in Chicago on the 17th. This date and place was chosen with a view to obtaining the attendance of the Western Directors at the Board meeting, as well as to make it convenient for all who came to the Board meeting to be present at the sessions of the Illinois Gas Association.

In view of the Institute's need of funds, the Secretary was instructed to discontinue sending the Proceedings free of charge to certain libraries, as similar institutions are now being charged for the same service.

The Board accepted the proposition of the House Committee of the United Engineering Building, fixing the yearly rental for the present headquarters at $1,444.50 as against $1,524.00 now paid. The reduction is due to a more accurate measurement of the space occupied.

The Secretary was authorized to publish in the "News" the paper by Mr. G. S. Barrows on "Some Phases of Room Heating by Means of Gas Burning Appliances," recently read before the American Society of Heating and Ventilating Engineers.

A letter was read from the President announcing that it had been deemed advisable to give up all thought of having a historical exhibit of the gas industry at the Panama-Pacific Exposition.

Mr. C. H. Nettleton was appointed the representative of the Institute at the meeting of the New England Association of Gas Engineers.

Approval was given to the list of names for insertion in the March ballot.

[Official Notice.]

Illinois Gas Association.

Office of the Secretary,
Chicago, Ill., Feb. 8, 1915.

The tentative programme for the eleventh annual meeting of the Illinois Gas Association, which will be held at the Hotel Sherman, in Chicago, on March 17 and 18, is as follows:

"Experience with a By-Product Coke Oven Plant as a Gas Producer," by C. C. Boardman.

"Inclined Retorts," by R. B. Richardson.

"Use of Exhaust Steam and Its Possible Economies in a Small Water Gas Plant," by S. A. Reinhart and C. A. Schneer.

"The Use of Lead Wool as a Jointing Material with Especial Reference to a 26-inch Main," by C. E. Reinicker.

"How the Shops Can Assist the Commercial Department in Promoting Friendly Relations with the Public," by H. E. Turner.

"The Immediate Gas Engine Business," by H. W. Edmund.

"Medical Work of the People's Gas Light and Coke Company of Chicago," by Dr. W. E. Post.

The dinner and vaudeville entertainment will be on Thursday night the 18th. The toastmaster is Col. E. G. Pratt; and the principal speakers will be Hon. W. J. Calhoun and Mr. John Gribbel.

To avoid the rush and confusion attending the allottment of dinner reservations, it is suggested that they be made in advance. Reservations will be made in the order in which they are received, assuring choice locations to those who order early. Round tables accommodating 8 persons will be used. Make checks payable to S. H. Moore, Chairman, Entertainment Committee, 1703 Peoples Gas Building, Chicago. Tickets $5 each; and remittance for seats desired must accompany orders. Horace H. Clark, Secretary.

[Special Telegraphic Report.]

SEVENTH ANNUAL MEETING, INDIANA GAS ASSOCIATION.

INDIANAPOLIS, IND., March 10, 1914.

Conditions this morning ideal in every way—weather, attendance and spirit. Quite a few visitors from a distance, including among others Mr. M. J. Insul, Vice-President Middle West Utilities Company, Chicago, and Mr. James T. Lynn, President Natural Gas Association, Detroit.

Routine matters were hurried over after President Blinn called the session to order at 9:45. The formal reports, showed the Association in vigorous condition, and 28 applications for membership.

The first formal address was that of Hon. C. J. Murphy, of the State Public Service Commission, and it was received with marked appreciation. Mr. Murphy stands for liberality in treatment of utilities by Commissions, and advocates at least 7% allowable return upon capitalization, besides adequate depreciation. S. E. Mulholland replied to the Commissioner in his usual happy manner, and President Blinn also made a few remarks, and a warm vote of thanks was given Mr. Murphy.

President Blinn then delivered his address, and it also dealt with relations to Public Service Commissions and regulation. At its close Vice-President Maxon appointed Messrs. George Summers, C. N. Chubb and D. S. Milne as a committee to consider it.

Mr. C. B. Scott, whose paper on "Industrial Safety" was next on the program, was kept away by illness, and Secretary Dunbar read the paper. It called attention to the huge industrial losses and loss of life by preventable accidents, and the late awakening to the importance of the matter, and was discussed by Messrs. W. S. Ray, George Summers, J. H. Maxon and President Blinn.

Just before the adjournment for lunch President Blinn presented the association with an official gavel; heretofore our presiding officers having had to depend on a borrowed hammer.

This afternoon's session was called to order promptly at 2 o'clock, and Mr. J. H. Maxon read his short paper on "Gas Rates," which was discussed by Messrs. Olds, V. V. Smith, C. N. Chubb, Mr. Gorman, engineer of the Public Service Commission, O. O. Thwing and George Summers.

Mr. W. G. Woolfolk followed with his paper on "Appraisal of Public Utility Properties," which was received with more than ordinary interest. It was understandingly discussed by Messrs. Insul, Gorman, Thwing and Maxon, after which the session adjourned.

The banquet from which we have just returned was a brilliant affair, due largely to the efforts of Mr. E. J. Burke, who was in charge of the arrangements. The toastmaster was Mr. Richard Lieber, of state wide fame, and 125 gentlemen sat under him. Besides the good food and drink we had an entertaining cabaret, and a lot of good speeches. Those who spoke were C. P. Wilson, President Blinn, S. E. Mulholland, Commissioner Judge Clarke, Ray Silverthorn, J. W. Dunbar and O. O. Thwing.—D.

March 11, 1915.

The pleasures of the banquet did not prevent a large attendance at the opening of the mornings session, which was given over to the reading and discussions of the papers "Comparative Costs of Gas aud Electricity," by B. L. Cash, and "Industrial Gas," by J. C. Shephard. These brought out the most spirited discussion we have had, participated in by Messrs Moriarity, Dollez, Cauley, Burke, Summers, Thwing and Maxon, and only ended when lunch hour arrived.

The afternoon session started at 2 o'clock with the paper by J. D. Forrest on "Application of By-Product Coke Ovens to the Gas Industry," in which Mr. Forrest dwells upon the very limited application possible. The report of the Bureau of Information by Chairman O. O. Thwing revealed the usefulness of that work, and its great value when administered by a really competent committee. Its work was praised and the committee continued.

The Nominating Committee now reported, and the following were elected officers for the year:

President, J. H. Maxon; Vice-President, G. M. Dalley; Secretary-Treasurer, J. W. Dunbar; Directors, 3 years, E. J. Burke, S. E. Mulholland, R. Ziegler; for 2 years, S. A. Elder.

Mr. J. T. Lynn, President of the Natural Gas Association, extended an invitation for the members to attend the Natural Gas Meeting in Cincinnati, May 16, 17 and 18, and Mr. O. O. Thwing, of the Joint Committee on International Gas Congress, urged attendence at the Congress in San Francisco in September.

This brought the convention to its close, in point of attendance and interest probably the most successful the Indiana Association has ever had.—D.

NATIONAL GAS RANGE WEEK.

The National Commercial Gas Association has designated the week beginning April 26 for a special concentration of effort upon the gas range. The announcement says:

In 1914 the idea was conceived of setting aside each year a definite week to be known as "Gas Range Week," and during that special week to concentrate all attention and action on the sale of gas ranges and popularizing gas as the perfect kitchen fuel.

Last year the project met with generous response. A very wide and substantial interest was taken and hundreds of gas companies throughout the country participated much to their advantage. The results were enthusiastically observed and there appeared good reason to repeat the undertaking in 1915.

This year it is desired that a greater number of companies take part, in order that "Gas Range Week" may be more national in its scope and influence, and that the results for good may be far-reaching. To the gas company wondering in what way they can take part in this movement, these suggestions may be of value:

Go over your prospects for gas ranges and by letter or other means circularize them in advance, calling attention to "Gas Range Week." If in conformity with your selling policies, offer a slight reduction in price, or better terms on ranges during this period. Have your salesmen solicit prospects and endeavor to induce people to come to your show room and see the ranges. Of course, a strong, particular effort should be made to specialize on the gas range during this week. Arrange a neat and attractive window display. Have nicely lettered window cards featuring gas ranges placed here and there. Some companies will place signs on the sides of their service wagons and automobiles. This is an excellent means of giving publicity to "Gas Range Week," as many people see the signs who never get near the gas office. Such wordings as

Remember "Gas Range Week"
April 26 to May 1
Visit the Gas Office

could be used. In fact, there are numerous ways to direct attentention to "Gas Range Week." Gas bill stickers, an advertisement or two in your local newspapers or a large banner across the store front will aid in publicity work.

But do something, do it earnestly, and it will pay.

In the April 24th issues of the "Saturday Evening Post" and the "Literary Digest" the National Commercial Gas Association will run half-page advertisements. Several million people throughout the land will read these advertisements. Many of these readers live in your town. These national advertisements are inserted with the idea of reinforcing and co-operating with your local effort to to make "Gas Range Week," April 26 to May 1, 1915, a success. This is the gas man's opportunity. All this concerted action and push focused on gas ranges for one week is bound to produce results. It did in 1914 and it will this year. But to share in this general good it is essential that you lend a hand. Think of what it would mean if every gas company in the country grasped this "Gas Range Week" idea and got behind it with a firm, earnest push! The result would cause us to marvel. Decide now to shout for "Gas Range Week" and begin to formulate your plans. There will be great strength and power in this united country-wide effort and every gas man should feel obliged for his own good and for the other fellow to take part in the campaign.

Remember "Gas Range Week," April 26 to May 1.

(*Continued from page 167.*)

of the revenue to be gained along these lines is shown by the fact that a 3-mantle inverted out-door arc operated from dusk until 10 P.M. will consume in a year 22,380 cubic feet, and if burned until midnight, 33,330 cubic feet.

In residence lighting one of the strongest points in favor of gas is the increased amount of light obtainable for the money expended. Charges for installing gas and electricity in residences depend entirely on the grade of work desired and the scheduled prices in force. The average prices for piping and wiring are about equal. While a stated length of wiring can be run somewhat cheaper than the same amount of pipe, the difference in this cost about equals the charge for accessories and extra runs for switches. In other words the cost per outlet for either gas or electricity is practically the same. The fact that it is important to have all new buildings piped throughout for gas needs great emphasis. This really forms the keynote in securing additional home lighting. No matter whether the system used in a residence is gas or electricity it is hard to induce the owner to undergo the tearing up required to change that system. So it is imperative that the established system be gas. While some lighting is secured by placing outlets in kitchens from fuel lines, and on first floors for portable lamps and bracket lights, yet to get the bulk of this business each room should be fitted with properly placed outlets to meet all requirements. In the past this feature was overlooked much to the sacrifice of gas lighting business. An organized effort of late has been brought to bear on this subject in the way of national advertising and other educational lines, with special work among designers, architects and builders, all with telling results. This work is of extreme value and should receive encouragement.

The influencing element that regulates the amount of gas lighting business of a company is the extent to which that company enters the merchandise field. The electric interests have an advantage in the large number of dealers handling electric supplies and working in conjunction with them. Some idea worthy of mention in the matter of promoting increased gas lighting are: securing co-operation of plumbers in the piping of buildings and residences, the handling of combination fixtures and sanctioning their use, and the adoption of up-to-date lighting products which necessitates the carrying of a large variety of stock supplies. Another point of importance is the attention that should be devoted by the manufacturing department in order to maintain the best possible pressure and quality regulation.

A fact that should ever be born in mind by gas companies, in order that a better grade of gas fixtures will be before the public, is that their cost depends largely on their design and quality, and not on their use; whether they are for gas or electricity. Pressure should be brought to bear on the manufacturers of fixtures and lighting systems to give gas fixtures equal ranking with electric. Catalogues and advertising of a general nature put before the public should feature the items using gas as well as electric in meeting modern demands, and not as secondary items. This would have a pronounced effect in establishing gas lighting and placing it on a proper plane. Not only would the gas interests benefit but also the fixture manufacturers and the dealer.

The cost of maintaining gas lighting in residences is a nominal one, and controlled largely by the installation. In a properly installed system of modern equipment, the cost of upkeep is greatly reduced over the old style burners. Breakage of mantles and glassware has been lessened in the newer lamps, which with the late reduction in the purchase price of mantles assists in minimizing the cost of maintenance. Where glassware is used with electric lamps the maintenance cost runs about the same as that of gas. The difference in favor of electricity in maintaining the lamps, about takes care of the repair charges on switches and the mechanical parts. To aid the lighting service, some companies have established a free house maintenance and inspection at stated intervals. They find it gives better satisfaction to both the company and consumer. Such a service can be made self-sustaining by the profit made in the sale of material; and at the same time helping to introduce modern equipment and stimulating the consumption of the lamps by keeping them in condition.

It is apparent from the standpoint of costs that gas has an advantage over electricity for illuminating purposes. This together with the superior quality of light obtained is sufficient to establish it as a leading lighting factor for all purposes, if receiving the proper encouragement from every division of the industry. It requires the expenditure of money, and effort in advertising and practice of modern methods to educate the public and over-shadow a somewhat established prestige in favor of electricity, accounted for by the alertness or those engaged in the electric field and by their emphasizing its one great asset—convenience. Enthusiasm is what counts, and should be instilled into everyone in the rank and file of the business so as to insure ultimate confidence in gas illumination in order to insure its sale on a larger and better basis.

The Gas Kitchen Equipment of the Biltmore Hotel.

By C. F. Herington.

The Biltmore, New York City, is the last word in hotel completeness. It contains every betterment, every improvement, every device for comfort and convenience found in any of the best hotels of America or Europe, with many special advantages and innovations of its own designing.

The hotel occupies the entire block surrounded by Madison Ave., 43rd Street, 44th Street and Vanderbilt Avenue, and is the only hotel in the world that has every room a real outside room. The plot on which the building stands was known for many years as Commodore Vanderbilt's grazing field. Time after time efforts were made to purchase this valuable piece of property, but during the Commodore's lifetime he would never place a valuation upon it. It was assumed by many that the grass plot would always remain, but when the new Grand Central Terminal was built the owners decided to put the valuable ground to use.

The architects of the building Messrs. Warren and Wetmore, were given unusual latitude to provide a house not only thoroughly fireproof, but one combining wholesome living conditions, and they made the most of their opportunities. Particularly notable and interesting are the kitchens, all of which are located above ground; the only workshops of their kind in New York having an abundance of natural light and air, which people who make a study of food preparation say is conducive to the most wholesome cuisine. Each of the kitchens is adjacent to the dining rooms that it serves, and they are planned upon a scale so comprehensive and so unusual as to establish a new mark in this important branch of hotel development. The main kitchen is 60 by 150 feet long; its general layout shown in Fig 1. The kitchen on the 22nd floor, for the banquet hall and the roof garden, is nearly as large and of similar plan and the sub-kitchens for the different dining rooms and for the help, also have the natural light feature.

The walls of the kitchens are covered with white tile and the floors are laid with French gray tile. The scullery is all glass encased, and while a part of the kitchen proper, is entirely separated from it.

As shown in the small cuts, efficiency and sanitation completely dominate the kitchen plans. From the elaborate ventilating system, which eliminates all excess moisture and odors to the smallest detail of equipment, everything speaks the thoroughness and care taken to provide ideal working conditions and the importance attached to the maintenance of a sweet and wholesome atmosphere in the departments given over to the preparation and care of food. And as we all know, gas is the greatest and most modern aid to cleanliness, it is used throughout and almost exclusively in these kitchens.

There are two six (6) inch services brought in from the gas mains, each having a separate meter, so that one service and meter is a standby in case the other breaks down.

Every hall and corridor has gas outlets and combination lighting fixtures throughout the hotel.

Fig. 2 shows the main service kitchen, the broiling department of the hotel, which contains 15 feet of gas broilers, with game ovens above heated by waste heat from the broilers; 8 feet of roast oven and 30 feet of all-steel cook's table, with steam table set in and a plate warmer underneath.

Fig. 3 shows the officer's kitchen with its 8 feet of gas range with double shelf; broiler with game ovens above, heated by waste heat from the broiler compartment; all-steel cook's table with copper bainmarie box and steam table set in; urns, egg boilers and sauce pan racks.

Fig. 4 shows the main banquet service kitchen which contains 10 roast meat plates, gas ranges with double shelf and 10 feet of broilers; two double compartment steamers, 6 foot roll and pastry warmer; two steam jacketed copper stock boilers; two steam jacketed nickel milk boilers; hot water urn and steel sauce pan racks.

In the main pastry department there are 8 feet of pastry gas ranges, with pastry gas ovens and toasting compartments.

American Gas Light Journal.

Mar. 15, 1915

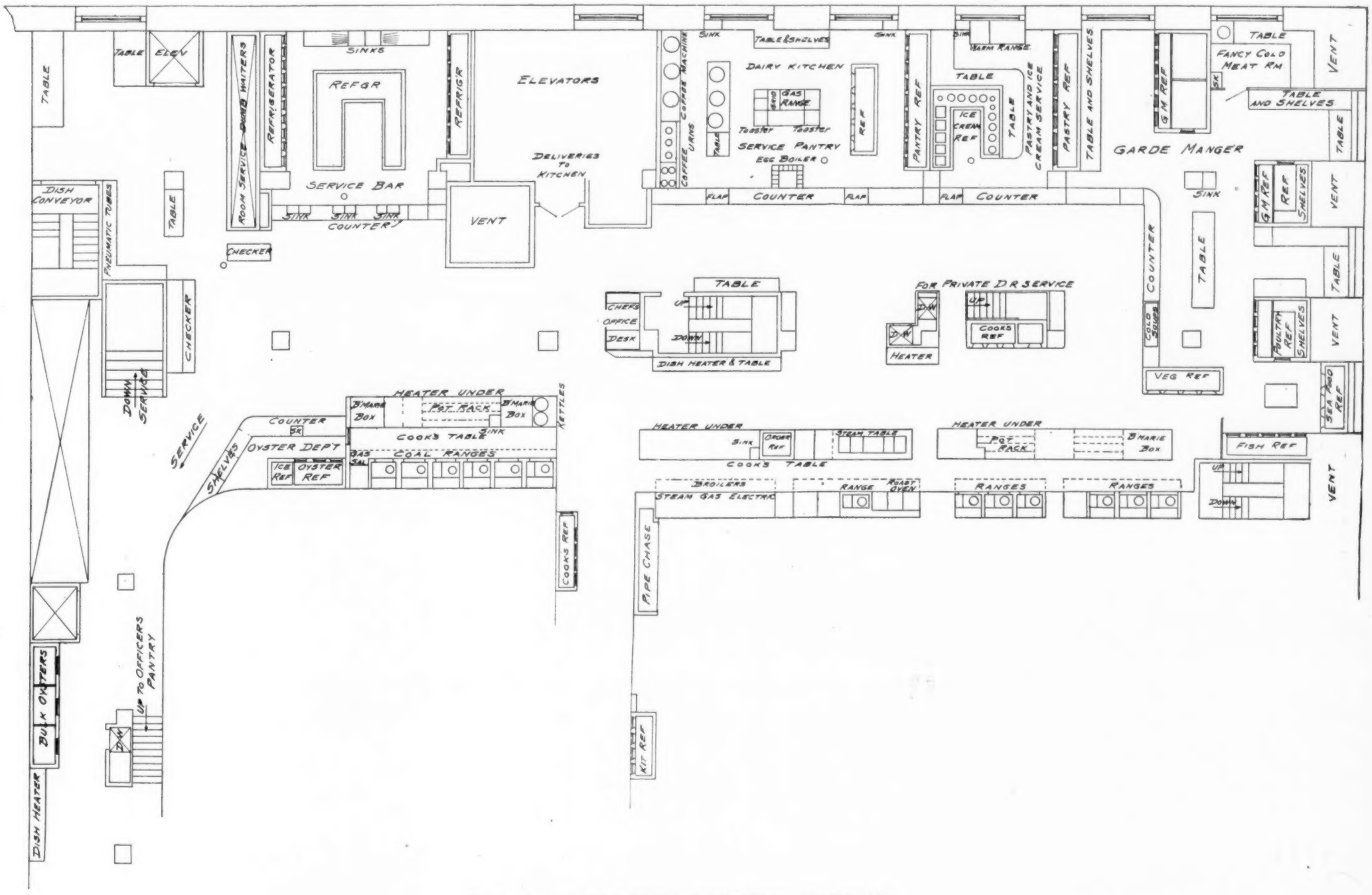


Fig. 1.—Layout of Main Kitchen, Hotel Biltmore, New York City.

Fig. 2.—Gas Ranges and Broilers.

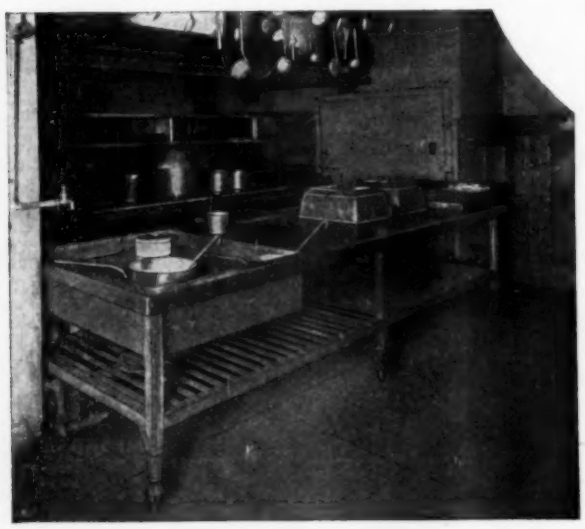


Fig. 3.—Officers Kitchen.

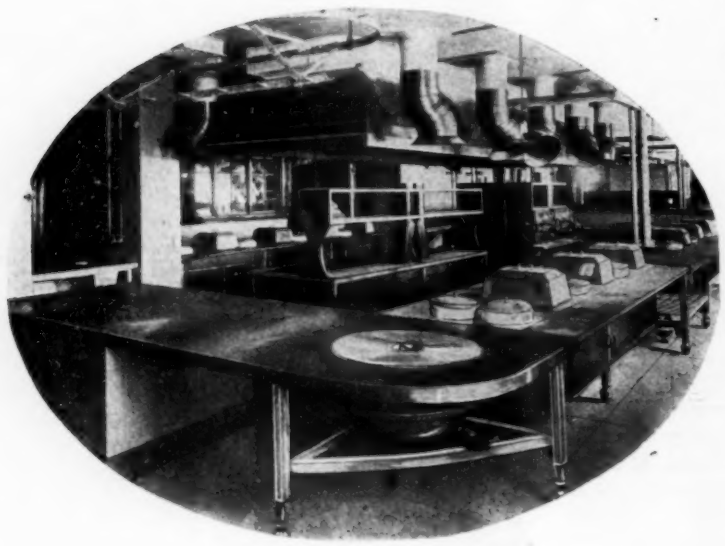


Fig. 4.—Banquet Service Kitchen.

Fig. 5 shows the grill kitchen serving pantry, which is equipped with a gas range and toaster, waffle and griddle plates, single

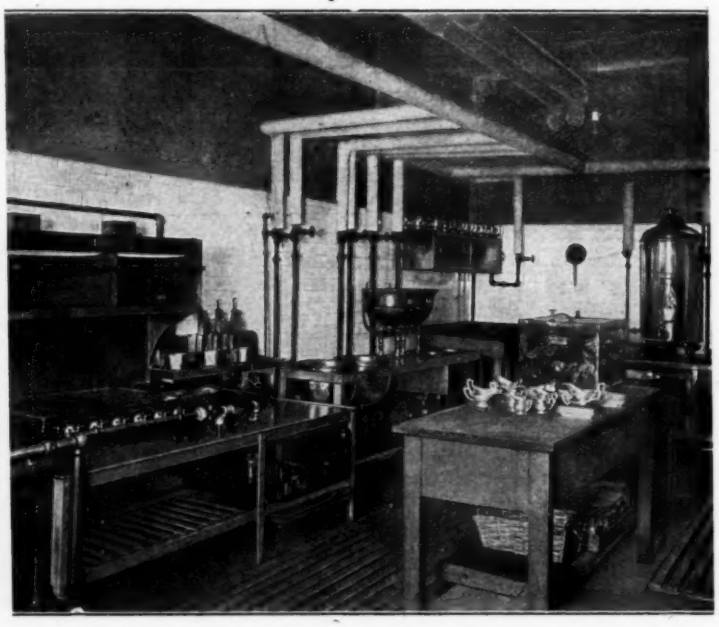


Fig. 5.—A Service Pantry.

compartment steamer, double jacketed steam kettles for milk, steam cereal cooker, warmer for service pots, hot water urn, coffee storage jars and tank. All the pantries connected with the kitchens throughout the hotel are similarly arranged and gas equipped.

Metallurgical Smoke.

The United States Bureau of Mines, Bulletin 84, says that metallurgical smoke causes considerable friction between that industry and agriculture in certain parts of the country. Owners of smelting plants are making every effort to devise ways to do away with possible damage and annoyance from smoke and are meeting with success, but the problem is peculiarly difficult in this country because of the large tonnages of material handled. As the mineral industry is one of the great basic industries of the country, it should be accorded freedom to work out the smoke problem for the benefit of all concerned.

Sometimes, in discussions of the smelter-smoke question by interested parties, gross misstatements are made. Thus, the agriculturist sees bad effects from smelter-smoke which other people cannot find, and the metallurgist sometimes goes so far as to claim that the smoke is beneficial to vegetation, or assumes that the damaging constituent is sulphur trioxide only, giving rise to sulphuric acid, ignoring entirely the sulphur dioxide content. It is evident that nothing is to be gained by such a policy, and the solution of the problem lies in its study by disinterested commissions, such as the one recently appointed by an agreement between the Department of Justice and the attorneys of the Anaconda Copper Company to study the smoke question in Montana in relation to the forest reserves.

Mining and metallurgy are often the advance agents of civilization and pioneers in establishing industrial centers. In many localities the mines and the smelters supplied by them were the only locators in great stretches of territory. Around them grew communities dependent upon them for a livelihood, and agriculture was of relatively small importance. But conditions changed with increasing population and the closer settlement of the West, and an agricultural industry has grown which, in the vicinity of the smelting plants, suffers in some degree from smoke. Still, the area damaged is comparatively small and the damage can be much lessened by the adoption of proper means. Some plants have installed devices to remove sulphuric acid from their smoke and dilute the smoke with air, greatly improving conditions.

The damage that smoke can do depends largely on climatic conditions, especially the humidity, being much greater in regions having a moist atmosphere. In this respect Montana, Utah and Arizona are favorably located and smelters in these States can discharge gases richer in sulphur dioxide without doing damage than those in a moister climate. For the same reason, the damage varies at different seasons of the year. A moist atmosphere and the rains of spring and early summer increase damage in vegeta-

tion, particularly as at that time of the year the young vegetation is more susceptible to injury.

It has been customary to discharge smelter smoke through very tall chimneys, on the assumption that the noxious gases discharged at considerable height will have opportunity to diffuse and become so diluted as to be comparitively harmless, but the efficiency of this method is now questioned. There is reason to believe that the use of high stacks increases the area to damage, whereas low stacks may intensify the damage but concentrate it within a smaller area. The better method may be to dilute the smoke and discharge it from a number of low stacks.

How To Burn Coke.

The "London Journal" summarizes instructions for burning coke under boilers as follows:

It is important that manufacturers and owners of boiler plants using coke should be supplied with proper directions as to its employment. It is suggested that the following would answer:

1. Being a volatile fuel, coke must be fired on a different principle to bituminous coal.

2. The fuel should be fired to maintain an even thickness from door to bridge.

3. The thickness of the bed of fuel must depend on the size of coke, and should be approximately as follows:

When using large coke (say 3-inch cubes) the fuel bed should be about 10 inches thick.

When using smaller coke (say 2-inch cubes) it should be about 8 inches thick.

When using broken coke (say 1½-inch cubes) it should be about 6 inches thick.

When using forge coke (say ¾-inch cubes) it should be about 4 inches thick.

4. A coke fire of the right thickness, when burning freely and correctly, should appear of a red and yellow color on top. If much blue flame is visible, the thickness is too great; if it is a distinct yellow color, the fire is too thin.

5. All the air required for combustion should be admitted underneath and through the grate bars. No air should be admitted through the doors or back of the bridge wall.

6. Coke requires plenty of draught—more than coal; so it is advisable to make a special examination for air leaks between the brickwork and boiler, through the damper opening and through badly fitting fire doors. An examination of this kind will frequently make all the difference between success and failure in burning coke.

7. A coke fire does not require poking or stirring up, but at intervals a slice should be passed between the fuel and the fire-bars, to break up clinker as it forms and prevent it from adhering to the bars and checking the admission of air.

8. The tools used should be kept sharpened. In burning coke this is of more importance than when burning coal.

9. The intervals at which a coke fire should be cleaned will depend upon the ash in the particular coke and the rapidity with which it is consumed. This will vary widely—say from 3 to 8 hours, according to circumstances.

10. In cleaning a coke-fire the same method should be followed as when cleaning a coal fire; but it is of the greatest importance that as little as possible of good coke be drawn out with the clinker and ashes. Unless great care is exercised, it will be found that after the fire is cleaned there is insufficient hot coke to ignite the fresh fuel. [This is a common fault with stokers inexperienced in coke firing.]

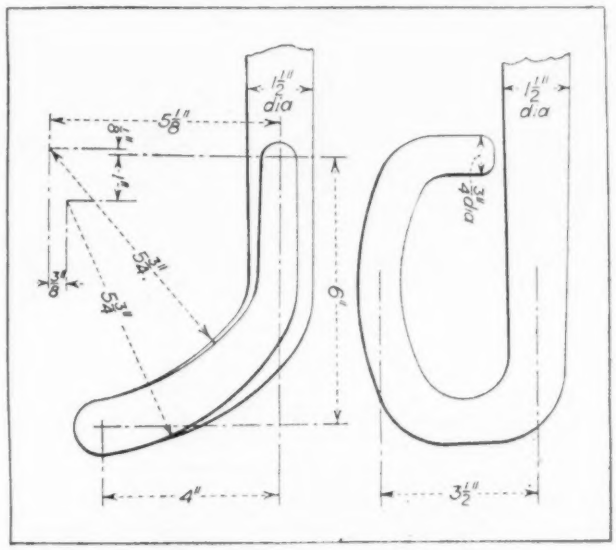
11. With a Lancashire boiler, when the load is on, a fair interval should be allowed between the cleaning times of the two furnaces, as it must be recognized that coke, like anthracite, being a non-volatile fuel, takes more time than bituminous coal to ignite and burn freely. With a Cornish boiler, when the load is on, it is advisable to clean one-half of the furnace at a time.

12. It is unnecessary to use any coal except when lighting up a cold boiler.

13. Fires can be banked quite satisfactorily with coke.

New Methods and Appliances.

SAFE HANDLE FOR WHEELBARROWS.—In wheeling through narrow doors and over rough ground the unprotected iron handles of barrows often swerve and cause bruised fingers. To prevent such troublesome wounds numerous designs have been suggested, one kind a spur riveted to the outside of the handle and shaped somewhat like a sword guard. The simplest device, however, is made by turning round the end of the handle, as in the accompanying sketch. In one factory where the device was tried accidents were a quarter of their former number after it came into use.



Care should be exercised to leave the loop quite wide so that, should the barrow fall sideways, the workman's hand may be withdrawn without running the chance of a sprained wrist which might happen if the handle is too narrow. This form is much easier to hold than either the straight handle or the one with the plain guard so that it is an aid to efficiency as well.

RUTILE DEPOSITS YIELD TITANIUM.—Rutile, from which is derived the metal titanium, is a redish, brownish, or nearly black mineral, composed of titanium dioxide, and, though it is widely spread through the rocks, it is rarely found in large quantities. Titanium exists in larger quantity in the earth's crust than copper, lead, zinc, or any of the common metals except iron, but it is called one of the rare metals because of the lack of concentrated deposits and because the metal is so difficult to separate that it has been seen by few people.

The value of rutile arises from the use of titanium as a scavenger in molten steel and cast iron, and from the use of titanium salts in dyeing textiles and in tanning leather. The largest known deposits of rutile are at Roseland, Nelson County, Va. A few other much smaller deposits have been found in the eastern part of the United States, and still other small deposits in foreign countries.

SPECIALLY HARD LATHE TOOLS.—Lathe tools are now made which surpass in hardness those of the finert special steels, and which outclass them many times in cutting metals. They are composed of an alloy of cobalt, chromium and tungsten invented by Elwood Haynes, of Kokomo, Ind. This alloy is also used for cutlery and takes an edge equal to good steel and yet is very non-corrosive.

AN INTERESTING TEST OF A 10-INCH HACKSAW BLADE.—A test of a hacksaw blade, which was calculated to show its non-breakable qualities, was recently made in Indianapolis, Ind. In this test a 10-inch non-breakable blade was coiled down to 1 inch. After the test the blade was straightened and ran to the full life of an all-hard blade. It is emphasized that breakage due to an awkward thrust of the blade being permitted to bind in the cut, which has heretofore been a source of great expense in operating hacksaw blades, is entirely eliminated with this new one. These blades can be supplied in lengths from 8 to 10 inches, and in widths from ½ to 9/16 inch, the number of teeth ranging from 14 to 32 per inch.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

UPON the recommendation of the Board of Directors the Stockholders of the Providence (R. I.) Gas Company, at the annual meeting of that corporation, voted to apply to the Legislature for the right to operate in the towns of Barrington, Coventry, East Greenwich, Scituate, Smithfield and Warwick.

FROM a Savannah, (Ga.) newspaper: "Nothing that has occurred in Savannah recently has been of so much interest as the announcemt that the Savannah Gas Company had met the wishes of the people by agreeing to reduce the rates on gas. Under the scale of rates that were put into effect March 1, it is estimated that the people of Savannah will save more than $30,000 the first year, and the saving will be correspondingly greater after July 1, 1916, when further reductions are to become effective. The city is now on a parity with other cities in the important matter of gas rates. Judging from expressions heard, the consensus of opinion is that the Savannah Gas Company has acted with liberality, and has met the wishes of the people in a spirit that deserves commendation."

W. F. HOLT, President of the Holton Power Company, has been asked by the city of Calexico, Cal., to state whether the company is in a position to pipe artificial gas to that city. In the event that Mr. Holt's company is willing to provide Calexico with this improvement, it will be necessary to lay the pipes before new street paving is finished. It is understood that the Holton Power Company has been agreeable to the move for some time, but had met difficulty in securing a franchise from the county, the gas plant being located in El Centro.

A CONTROVERSY is boiling between the merchants of the city, Holyoke, Mass., and Manager John J. Kirkpatrick of the Municipal Gas and Electric Department. Objection has been raised by the merchants against the sale of gas appliances by the department. Said one merchant, "Manager Kirkpatrick is violating the law in selling such appliances. He is confiscating our business without compensation. When they took over the gas and electric business of the Water Power Company they paid about $1,000,000. If he wants to buy out our business let him do so." Manager Kirkpatrick points out that he would have no desire to enter the business of selling appliances if the merchants took the trouble to advertise the fact that such appliances are on the market. All he wants is to have the general public educated to the fact that gas appliances are to be had and especially how cheaply they can be used.

MR. G. W. JOHNSTON, manager of the Western Branch of the Detroit Stove Works at Chicago, died suddenly in Minneapolis on February 26th. Mr. Johnston was born in Chicago about forty years ago, and has been connected with the Detroit Stove Works for more than 23 years, having risen from the position of office boy. He was a man of genial nature and sterling character, combined with sound business judgment, and his loss will be deeply felt by the officers and employees of the Detroit Stove Works, as well as by his many friends. He was interested in association work, and, at the time of his death, was a member of the National Commercial Gas Association, and was treasurer of the Western Central Stove Manufacturers Association.

ADVICE from Trenton, N. J., says: "Argument in the rehearing on the 90-cent gas rate has been finished in the Court of Errors and Appeals, but it will probably be about 10 days before a decision is forthcoming. In the absence of Richard V. Lindabury, counsel for the Public Service Corporation, Thomas H. McCarter, President of the Corporation, made the principal argument. Chancellor Walker announced that the case would be taken under advisement in conference."

BIDS for the works repairs at the Richmond, Va., plant have been secured and tabulated. The Stacey Manufacturing Company bids on a tar extractor, and J. H. Gautier & Co., Parker-Russell, Mining and Manufacturing Company, and the D. R. Russell Engineering and Developing Company on retorts.

ARTHUR GARDNER, who has resigned from the sales department of the New Haven (Conn.) Gas Light Company, after being with the company 16 years, was given a farewell banquet by fellow employees and was presented with a gold watch, suitably inscribed. Those present were: J. P. Bruce, W. Saunders, W. Doyle, T. Chalmers, J. Goode, E. Seipold, J. Beuton, F. Thomas, W. McPhee, F. Allen, W. Murphy, G. Meades, T. Mulligan, J. Crowther, H. Lehr, W. Quinn, T. Bristol, J. Noll, A. Creig, C. Halstead, J. Condie, E. Whitney, R. Johnson, J. Boltine, B. Gilleo, J. Gardner, E. Remkus, J. Meaney, L. Babcock, J. Cargill, R. C. Bruce, D. Blackie, F. Daley, H. Trace, J. Anderson, Alfred R. Burr, Frank J. Shields, Horace J. Ayling, E. Miles Bradley, Charles A. Drum, Fred W. Foote, Ernest W. Ackerman, Charles J. Lehr, William Munro, Charles Ringwald, Charles Grant, Fred Schecher, Raymond Baldwin, C. M. Manns, Clarence Dimock, Basillo De Vita, Howard B. Welch, Clinton E. Holt, Charles F. Hine, Wilifred H. Tiernan, James L. Rogan, Franklin L. Park, Carl Sucher, Jacob Vreeland, Dennis O'Meara, George W. Bolton, Thomas J. Morris, Charles I. Williams, William M. Bates and Samuel Husted.

To pave the way for the establishment of a permanent organization among the employees of the Meriden (Conn.) Gas Light Company, in view of more efficiently serving the public, the company tendered them a banquet in the new storehouse building at the gas works. The affair was also attended by the wives of some of the officials and employees, the entire party numbering about 75. General Manager Charles A. Learned was toastmaster of the evening, and after welcoming the guests and telling them the object of the gathering, he briefly related the history of tbe company, and then introduced Harry N. Tolles, of Chicago, who made an address on "Building Confidence in Business."

THE Wisconsin Gas and Electric Company, with a view of stimulating interest in the domestic science classes in the schools of Kenosha, has offered a gas range to be presented to some young woman in the schools. The contest is open to the high school domestic science classes and to the classes in the same branch in the evening school. In order to eliminate the students of one department, examinations covering the subject of handling gas ranges and cooking with gas will be held. The member of the winning group who attains the highest scholarship mark will be declared the winner of the range. Should she prefer to take its cash value the company will be ready to give it,

So far in the controversies with the city the St. Joseph (Mo.) Gas Company has won nearly every point at issue. The latest decision in its favor given by Judge C. H. Mayer, who refused to annul the franchise and charter of the company, places the company in position of having a perpetual franchise to furnish the city with either manufactured or natural gas.

THE proposition of boulevard lighting has been discussed so much by the city boosters' club and the common council of Charlotte, Mich., that the Charlotte Gas Company has installed a few of the gas kind on both sides of the main street, on the south end, in order to demonstrate what can be done with gas. The boulevard system of lighting will be adopted in the near future, but it is not known whether electricity or gas will be used.

ALL the former members of the Board of Directors of the Dayton (O.) Gas Company were re-elected at the meeting of the stockholders. At the conclusion of the meeting the Directors met and re-elected the former officers. Reports of the business during the past year were read, reflecting prosperous financial conditions. President Hanley stated that the results of the year's activities were highly satisfactory and displayed a healthful situation.

THE Taunton (Mass.) Gas Light Company has issued the following open letter:

To the Customers of the Taunton Gas Light Company:

Replying to a communication of recent date relative to a reduction in the price of gas, the board of directors, after careful consideration, would say that it has for many years been the policy of this company to voluntarily reduce the price of gas whenever conditions warranted such action, with the result that to-day in no city in the State of the size of Taunton are rates lower than in our own, where the smallest individual consumer pays a net price of $1 per 1,000 feet as compared with an average charge of about $1.30 per 1,000 for the whole State of Massachusetts. In this connection it must be noticed that owing to freight charges, coal, which is by

far the largest item in gas production, costs more than in several of our neighboring cities, while our smaller population and great extent of territory covered, make the cost of distribution decidedly greater than in other larger and more densely settled communities where not only are the costs less and the total sales more in volume, but the number of consumers per mile of main pipe is much larger. The company is to-day engaged in an extensive remodelling and enlargement of its works, not only in order to care for its increasing business, but in the belief that the new and improved methods now being introduced will enable it to so cut down the cost of production as to make a further reduction in price possible soon after new facilities are in regular running order. The additions cannot be completed until late in the year, and meanwhile the company will be under the burden of paying interest upon the amount so invested (ultimately about $200,000) with absolutely no return from this sum before the completion of the work. While it is manifestly impossible to foresee the future, the management confidently believes the results of this outlay will be satisfactory, in which case our customers may rest assured that the policy of sharing with the public will be continued in the future as in the past.

THE first completely equipped wood gas manufacturing plant on the Pacific Coast was opened in Auburn, Wash., last month, when the Auburn Gas Company started operation. The plant is a subsidiary of the Gas Service Corporation of America, whose patented process of wood gas manufacture is used. The capacity of the plant is 100,000 cubic feet per day, the present holder capacity being 51,000 cubic feet. Over 50 families in the city have already made application for the service and are being connected up as fast as is possible.

THE Pittsfield (Mass.) Coal Gas Company employees' association bowling banquet was held at the American House last week, covers being laid for 15. The affair was an informal one. Records made in the recent bowling series were announced. Francis Schultz made a high single of 126 and George Nixon had a high total of 315. Plans were made for another tournament. In the match rolled following the banquet Rudolf Kilian was the winner. Those present at the banquet were: Francis Connor, Michael Connors, David M. Cullen, Jr., John Finn, William Gleiner, Rudolf Kilian, Patrick Lynch, Herman Meyer, George R. Nixon, John J. Quinn, Richard Schiemenz, Ralph Volin, Francis Schultz, John Walsh and Arthur Wright.

A MUSCATINE, Ia., dispatch says the local gas company will build a plant to cost $50,000 for the manufacture of water gas.

So surpassingly satisfactory has been the patronage of the St. Petersburg (Fla.) municipal gas plant that the board of city commissioners is making plans for several considerable extensions of the system. Consumption of gas now greatly exceeds the estimated consumption prior to the erection of the plant, and this is highly gratifying to the commissioners. Extensions have been made already into Roser Park and on the north side of the city. Applications for gas in districts not now reached by the mains have been so numerous that the commissioners have decided to make the extensions at once.

As the result of the special election conducted in Glendive, Mont., M. W. Milligan of Miles City was granted a franchise for the supplying of the city with natural gas. Comparative little interest was taken in the election, in fact only 56 votes were cast. Of that number 33 were in Ward No. 1 and all but one of them were favorable to the proposition. In Ward No. 2 the vote stood 18 for the granting of the franchise and five against. No votes were cast by women electors. Two women appeared at the polling place in Ward No. 1 for the purpose of voting, but were unable to do so for the reason that they were not free holders, which is a requirement in elections of this kind. It is believed that lack of interest in the election was due to the fact that gas franchises have been granted to applicants on two former occasions and that nothing has resulted therefrom.

JUDGE ALBERT HAIGHT, sitting as referee, is taking testimony in the certiorari proceedings started by the Buffalo (N. Y.) Gas Company to review its special franchise assessments for the years 1912, 1913 and 1914, amounting to about $1,900,000. The company contends that the active competition of the Natural Gas Company has greatly reduced the value of its mains and other properties upon which the state board of tax commissioners levies its special franchise assessment.

UTILITIES COMMISSION NEWS.

WHY DID THEY WANT TO COMBINE?—The New Hampshire Commission has filed a supplementary report with the Supreme Court upon the petition of the Grafton County Electric Light & Power Company for leave to acquire properties of the Lebanon and Mascoma electric companies, operating in Lebanon and Hanover. The commission finds that the proposed consolidation is not in the public interest; that the present capitalization involved is $118,000, against a proposed capitalization of $360,000; and that as the securities of the Lebanon and Mascoma companies are now held by the Mascoma Light & Power Company of Maine, the latter corporation can do anything with the Grafton Company that the petitioners could accomplish. The board holds that these companies should remain independent rather than be merged with the result that local costs and revenues could not be properly determined. The commission "believes it to be undesirable that governmental sanction shall be given to the buying up of public utility properties which have accumulated a surplus out of rates paid by the public, for the purpose of merging into a new corporation and capitalizing the aggregate existing surplus." The appeal to the Supreme Court will be considered anew, the court having ordered the commission to determine whether the proposed consolidation is in the public interest, prior to deciding an appeal from previous adverse decision of the board.

OHIO COMMISSION REPORT.—In its annual report for 1914 the commission says in part:

"No state that has undertaken regulation through boards or commissions created for that purpose has ever contemplated dispensing with them.

"More than $50,000 of this year's expenditures was made necessary by that provision of the law which obligates the commission to make physical valuations of the property of public service corporations upon request of municipalities. As the law now stands, the Council is not required to disclose to the commission, or to any one else, the purpose for which such valuation is desired, and, unless the purpose is disclosed, the commission thus far has proceeded upon the theory that such valuation is to be made for rate-making purposes.

"Whatever use may be made of valuations in fixing rates for service either by the commission or by municipal authorities, it is apparent even now, when the work of appraisal of utilities is but partially completed, that great good to the utilities themselves, and therefore to the people whom they serve, is accruing and will accrue, and the commission is pleased to report that the requirements of the appraisal order were met by the utilities in a splendid spirit of co-operation.

"The commission believes there should be additional legislatlon as follows:

"Giving the commission authority to suspend or postpone the effective date of all schedules.

"Fixing a definite time for the payment of assessments levied upon railroads and utilities for the maintenance of the commission.

"Requiring railroads and public utilities to immediately notify the commission of changes in the personnel of their responsible officers.

"Authorizing the commission to order the refunding of illegal or unreasonable charges by railroads or utilities.

"Exempting the members of the commission and all of its employees from being required to attend or testify in civil actions when the matter out of which the action grew has been officially investigated by the commission or its employees."

GARY PLANT TAKES SHELTER.—The Gary (Ind.) Heat, Light and Water Company, a subsidiary of the United States Steel Corporation, of its own accord surrended to the Indiana Public Utility Commission all of its permits and franchises. In accordance with the law, the company will receive an indeterminate permit to conduct its business, and all future rates will be decided by the Utlity Commission.

Hostile local legislation and the activity of would-be rivals are said to have caused the company to make the move. The action, it is said, will bar a prospective competing company. In 1907 the present company, financed by the United States Steel and New York capitalists, installed a water, gas and electric light system costing several million dollars.

Financial Notes.

In his annual report to the stockholders of the AMERICAN GAS COMPANY, the president of the company stated that the board of directors has decided not to sell the remaining $1,000,000 of three-year 6% secured gold notes, the first million of which was sold last October. It was decided to keep the notes in the treasury and to make an allotment of 20% of stock. The stock allotment will retire all floating debt of the company and put it in funds for the improvements and extension requirements for the year. These requirements include the completion of the large installations at Chester, Rockford and Hubbell's Falls. The earnings statement of the company and its affiliated companies follows:

	1914	1913
Gross earnings, affiliated companies	$3,764,837	$3,410,976
Operating expenses, affiliated companies	1,967,704	1,789,407
Balance	$1,797,133	$1,621,569
Fixed charges, affiliated companies	1,007,894	901,071
Balance	$789,239	$720,498
Depreciation charges, affiliated companies	173,421	149,005
Balance	$615,818	$571,493
Sundry income items	271,044	248,286
Total revenue, American Gas Company	$886,862	$819,779
Expenses:		
Bond interest	$142,623	
Note interest	2,378	
Interest on loans	50,228	
Expenses and taxes	139,349	
	334,578	314,268
Surplus	$552,284	$505,511
Dividends	374,882	311,596
Net surplus	$177,402	$193,915

ALEXANDER BROWN & SONS announce that they will receive subscriptions for $2,500,000 CONSOLIDATED GAS, ELECTRIC LIGHT AND POWER COMPANY of Baltimore 5% 2-year convertible notes at 98 and accrued interest, at which price they yield slightly over 6%. Payment is to be made in full in Baltimore or New York funds on March 23, 1915. Subscriptions will be closed at noon, March 9, or earlier at the discretion of the bankers. Stockholders of record March 10, whose subscriptions are postmarked not later than March 17, will receive allotments of $100 for every full share of stock held, notwithstanding any over-subscription for the notes.

THE financial statement of the San Francisco operations of the PACIFIC GAS AND ELECTRIC COMPANY, on file with the Board of Supervisors, shows that the gross receipts of the gas department of the corporation were $3.793,758. This, it is explained, includes $348,676 in excess of the ordinance rate which was collected under an order of the United States Court. The electrical department collected a total of $3,249,321, which included a similar excess of $191,213.

THE annual report of the PUBLIC SERVICE COMPANY OF NORTHERN ILLINOIS for the year ended December 31, 1914, shows that the operating revenue had increased $601,766 over 1913, while the operating cost had increased but $58,985;

Gross earnings		$6,656,899
Operating revenue	$5,938,133	
Merchandise sales and other income	718,766	
Expenses (including taxes)		3,656,685
Operating expenses	$3,053,655	
Cost of merchandise sales and of other income	603,030	
Earnings for fiscal year 1914		$3,000,214
Charges against earnings:		
Interest on bonds and notes		1,461,462
Available for dividends		$3,538,752
Dividend paid:		
Preferred stock		455,280
Common stock		503,125
Surplus for 1914		$580.347
Appropriated out of surplus earnings for the year to establish an amortization and depreciation fund		400,000
Balance carried to surplus		180,347

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